UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,134	10/21/2003	Christopher J. Stakutis	SJO919970205US4/IMBCP013	6608

50799 7590 06/22/2006

CANADY & LORTZ - IBM
ORIGIN LAW
2540 HUNTINGTON DRIVE
SUITE 205
SAN MARINO, CA 91108

EXAMINER	
MOFIZ, APU M	

ART UNIT	PAPER NUMBER
2165	

DATE MAILED: 06/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/691,134	STAKUTIS ET AL.	
	Examiner	Art Unit	
	Apu M. Mofiz	2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Applicant's Remarks

1. Applicant's arguments submitted on 06/01/2006 with respect to claims 1-40 have been reconsidered but are not deemed persuasive for the reasons set forth below.

Applicant argues (under REMARKS section) the following:

(1) "nowhere does Gibson teach or suggest a bypass, executing on at least the first node, for interceding in response to an access request applied thereby to the file system, by transferring data designated by that request ... in accord with administrative information maintained by the file system pertaining to storage of that data as presently claimed, e.g. in claim 1. The bypassing (or intercepting, e.g. as used in claim 19) of an access request avoids directing the access request to the file manager in the usual manner while still using the administrative information (e.g., file maps) from the file manager as presently claimed in each of the independent claims 1-4,16,19 and 28."

(2) "However, the office action fails to recognize that operation of the NASD architecture as taught by Gibson requires that "because clients directly requests access to data in their files, a NASD drive must have sufficient metadata to map and authorize the request to disk sectors." See page 275, section 3.4, second paragraph, lines 9-11. Thus administrative information (e.g., file maps) as taught by Gibson resides on the NASD drive and not with the file manager as presently claimed. Moreover, Applicants

submit that Gibson teaches away from using administration information from the file manager as presently claimed by stating that a NASD drive "must have" the metadata to map and authorize the request to disk to support clients directly requesting access to the data."

As to Applicants arguments, Examiner respectfully disagrees. Gibson teaches a bypass, executing on at least the first node, for interceding in response to an access request applied thereby to the file system, by transferring data designated by that request ... in accord with administrative information maintained by the file system pertaining to storage of that data (i.e., *"By providing direct data transfer between storage and client, network-attached storage devices have the potential to improve scalability for existing distributed file systems (by removing the server as a bottleneck) ... The disk drive industry anticipates the marginal cost for on-disk Fibre Channel interfaces, relative to the common single-ended SCSI interface ...* ***Seagate's Barracuda FC*** *is already providing packetized SCSI through* ***Fibre Channel network ports to directly attached hosts*** *... Instead we focus on selecting* ***a command interface that reduces the number of client-storage interactions that must be relayed through the file manager*** *... Common, data-intensive operations,* ***such as reads and writes, offloading more of the file manager's work*** *without integrating file system policy into the disk. ...* ***while policy decisions are made in the file manager*** *... Authorization, in the form of a time-limited capability applicable to the file's map and contents, should be provided by the file*

manager to protect higher-level file systems' control over storage access policy. ***The storage mapping metadata, however, could be provided dynamically [VanMeter96a] by the file manager*** *or could be maintained by the drive. ... While a single drive object will suffice to represent a simple client file, multiple objects* ***may be logically linked by the file system*** *into one client file. ... As an example of a possible NASD access sequence, consider a file read operation depicted in Figure 3. Before issuing its first read of a file, the client authenticates itself with the file manager and requests access to the file. If access is granted, the client receives the network location of the NASD drive containing the object and a time-limited capability to access the object and for establishing a secure communication channel with the drive. After this point, the client may directly request access to data on NASD drives, using the appropriate capability."* The preceding text excerpts clearly indicate that a client/first node and a server/file manager/second node is connected/coupled by a network e.g., a LAN/first pathway. The client is also connected to a storage device/peripheral device e.g. Seagate's Barracuda FC through a Fibre Channel network port i.e., third pathway. The server is also connected to the storage device through a network port i.e., the second pathway. A typical access request from a client to files that are stored in the storage device goes through the file manager/server. **A command interface decides which of the access requests should go through the file manager (i.e., the first and the second path) and which of the requests should go directly to the files in the disk (i.e., the third path).** The command interface thus bypasses **(i.e., "a deflected route" by Collegiate Dictionary)** user request to access files/ file system in accord with the **administrative information (e.g., file mapping) in**

the file manager. Therefore Applicant's argument that the metadata stored in the drive is not proper **(i.e., it can be provided by the drive or the filemanager)**. The administrative information at the server/file manager includes file mappings i.e. data containing actual physical locations in the storage disk. The files may be linked logically also.) (pages 272-277 and especially section 3.3 and 3.4).

Any other arguments by the applicant are either more limiting than the claimed language or completely irrelevant.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1-40 are rejected under 35 U.S.C. 102(a) as being anticipated by Gibson et al., File Server Scaling with Network-Attached Secure Disks, ACM June 1997, pages 272-284 and hereinafter referred to as Gibson.

As to claims 1,2,3,4,16,19,20 and 28, Gibson teaches a digital data processing system with improved access to information stored on a peripheral device (i.e., *"By providing direct data transfer between storage and client, network-attached storage devices have the potential to improve scalability for existing distributed file systems (by removing the server*

as a bottleneck) ... The disk drive industry anticipates the marginal cost for on-disk Fibre Channel interfaces, relative to the common single-ended SCSI interface ... ***Seagate's Barracuda FC*** *is already providing packetized SCSI through* ***Fibre Channel network ports to directly attached hosts*** *... Instead we focus on selecting* ***a command interface that reduces the number of client-storage interactions that must be relayed through the file manager*** *... Common, data-intensive operations,* ***such as reads and writes, offloading more of the file manager's work*** *without integrating file system policy into the disk. ... while policy decisions are made in the file manager ... Authorization, in the form of a time-limited capability applicable to the* ***file's map and contents, should be provided by the file manager*** *to protect higher-level file systems' control over storage access policy. ... While a single drive object will suffice to represent a simple client file, multiple objects* ***may be logically linked by the file system*** *into one client file. ... As an example of a possible NASD access sequence, consider a file read operation depicted in Figure 3. Before issuing its first read of a file, the client authenticates itself with the file manager and requests access to the file. If access is granted, the client receives the network location of the NASD drive containing the object and a time-limited capability to access the object and for establishing a secure communication channel with the drive. After this point, the client may directly request access to data on NASD drives, using the appropriate capability."* The preceding text excerpts clearly indicate that a client/first node and a server/file manager/second node is connected/coupled by a network e.g., a LAN/first pathway. The client is also connected to a storage device/peripheral device e.g. Seagate's Barracuda FC through a Fibre Channel network port i.e., third pathway. The server is also connected to the storage device through a network port i.e., the second pathway. A typical access request from a client to a file system

wherein the files are stored in the storage device goes through the file manager/server. In this case, the client only needs initial file mapping, authorization, administrative information, i.e., file meta data from the server/file manager. After that all read, write or other file system operations go directly to the storage device. A command interface (i.e., filter driver) in the client/first node reduces/filters file system requests that need to be relayed through the server/file manager and hence bypassing the server. The administrative information at the server/file manager includes file mappings i.e. data containing actual physical locations in the storage disk. The files may be linked logically also.) (pages 272-277), comprising: A. first and second nodes coupled to one another over a first communications pathway (See explanations above) (pages 272-277), B. the second node being coupled to a peripheral device over a second communications pathway (See explanations above) (pages 272-277), C. the first node being coupled to the peripheral device over a third communications pathway (See explanations above) (pages 272-277), D. a File system, executing on the first and second nodes, being capable of responding to access requests generated by the first node, for (1) transferring data designated by the request between the first node and the peripheral device via the second node and via the first and second communications pathways (See explanations above) (pages 272-277), (2) maintaining administrative information pertaining to storage of the data designated by the request on the peripheral device (See explanations above) (pages 272-277), E. a first bypass, executing on at least the first node, for interceding in response to at least a first selected access request applied thereby to the file system, by transferring data designated by that request between the first node and the peripheral device over the third communications pathway in accord with

administrative information maintained by the file system pertaining to storage of that data on the peripheral storage device (See explanations above) (pages 272-277).

As to claims 5 and 24, Gibson teaches wherein the first node is a client node and the second node is a server node (section 3.3 and 3.4).

As to claims 6 and 25, Gibson teaches wherein the initiating step includes at least initiating transfer of the data designated by the first access request between the first node and the peripheral device over a communications pathway that differs from that over which a file system executing on at least one of the first and second nodes would transfer data in response to the first access request (section 3.3 and 3.4).

As to claims 7 and 26, Gibson teaches wherein the initiating step includes at least initiating transfer of the data designated by the first access request between the first node and the peripheral device via a directly attached disk connect (section 3.3 and 3.4).

As to claim 8, Gibson teaches wherein the initiating step includes at least initiating transfer of the data designated by the first access request between the first node and the peripheral device via fibre channel (section 3.3 and 3.4).

As to claims 9 and 27, Gibson teaches wherein the initiating step includes at least initiating transfer of the data designated by the request via a direct connection between the first node and the peripheral device, wherein the direct connection comprises any of a fibre channel, a firewire bus, a serial storage architecture (SSA) bus, a high-speed Ethernet bus, a high performance parallel interface (HPPI) bus, and other high-speed peripheral device bus (section 3.3 and 3.4).

As to claims 10 and 17, Gibson teaches wherein the initiating step includes at least initiating transfer of the data designated by the first access request to physical storage locations on the peripheral device determined from the administrative information (section 3.3 and 3.4).

As to claims 11,18 and 29, Gibson teaches obtaining as administrative information a map indicative of physical locations at which the data are stored on the peripheral device (section 3.3 and 3.4).

As to claim 12, Gibson teaches wherein the responding step comprises obtaining the map by generating and applying to the file system a second access request (section 3.3 and 3.4).

As to claim 13, Gibson teaches wherein the second access request is for access to a logical unit to which access is controlled by the second node (section 3.3 and 3.4).

As to claims 14, 20 and 30, Gibson teaches wherein the second request is for access to a logical unit other than a file designated in the first access request (section 3.3 and 3.4).

As to claim 15, Gibson teaches wherein the second access request is a request to write a file (section 3.3 and 3.4).

As to claims 21 and 31, Gibson teaches wherein the logical unit is a file that resides on a peripheral device local to the first node (section 3.3 and 3.4).

As to claims 22 and 32, Gibson teaches wherein the second access request is a request to write a file (section 3.3 and 3.4).

As to claim 23, Gibson teaches generating and applying to the file system a third access request, the third request designating the logical unit designated by the second access request (section 3.3 and 3.4).

As to claim 33, Gibson teaches the bypass comprising a second filter driver executing within and coupled to a file system of the second node (section 3.3 and 3.4).

As to claim 34, Gibson teaches wherein the second filter driver generates the map in response to a further access request generated by the first filter driver (section 3.3 and 3.4).

As to claim 35, Gibson teaches wherein the first filter driver selectively issues a request to the file system of the first node to create a mapped device corresponding to the peripheral device (section 3.3 and 3.4).

As to claim 36, Gibson teaches wherein the first filter driver compares information regarding a network volume being mounted to local volumes to which the first filter driver has access to determine whether a communications pathway exists for transfer of data between the first node and the peripheral device that does not include the second node (section 3.3 and 3.4).

As to claim 37, Gibson teaches wherein the communications pathway over which the first filter driver transfers data designated by the first access request differs from that over which a file system executing on at least one of the first node and the second node would transfer data in response to the first access request (section 3.3 and 3.4).

As to claim 38, Gibson teaches wherein the communications pathway over which the first filter driver transfers data designated by the first access request is a direct connection (section 3.3 and 3.4).

As to claim 39, Gibson teaches the bypass is a communications pathway over which the first filter driver transfers data designated by the first access request comprises any of a fibre channel, a firewire bus, a serial storage architecture (SSA) bus, high-speed Ethernet bus, high performance parallel interface (HPPI) bus, and other high-speed peripheral device bus (section 3.3 and 3.4).

Conclusion

4. **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Points of Contact

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Apu M. Mofiz whose telephone number is (571) 272-4080. The examiner can normally be reached on Monday – Thursday 8:00 A.M. to 4:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached at (571) 272-4146. The fax numbers for the group is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-9600.

Apu M. Mofiz
Primary Patent Examiner
Technology Center 2100

June 20,2006